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NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

Editor - Captain F. W. Farrar. (MC). U.S.N.

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Report on the Evaluation of Four Drugs Used to Maintain Blood Pressure During Spinal Anesthesia: Dripps and Deming, working in the Department of Anesthesia, Hospital of the University of Pennsylvania, and the Harrison Department of Surgical Research, University of Pennsylvania School of Medicine, report on a recently completed study.

The administration of a pressor drug prior to inducing spinal anesthesia has become almost routine. Various sympathomimetic substances have been employed in an effort to maintain blood pressure during this type of anesthesia, the list including practically every vasoconstricting agent known to pharmacology. With such a large group of drugs available it is difficult to select a particular one and be reasonably certain that the best has been chosen. It is evident, therefore, that definite criteria should be established for such a selection and that large series of controlled cases should be analyzed so that new drugs can be critically compared with those in common use today. Certain questions demand answering: (1) What can be expected to happen to blood pressure if pressor drugs are not used? (2) Is there one particular drug which is more effective in maintaining circulatory adequacy during spinal anesthesia? (3) Are there side-actions of some of these drugs which make their use less desirable despite a proved ability to sustain blood pressure?

In an effort to answer some of these questions, a study has been made of 2500 patients to whom spinal anesthesia was administered. This series was divided into groups of 500 cases as nearly alike as possible according to age, type of operation, physical condition, and type of anesthetic agent. The same group of surgeons and anesthetists functioned throughout the study and preoperative preparation of the patients remained essentially unchanged during the investigation. Five hundred patients received no pressor drug, and successive groups of 500 each received, respectively, ephedrine, paredrine, a combination of pitressin and ephedrine, and methedrine. The course of the blood pressure subsequent to the administration of these various pressor drugs has been analyzed statistically from a number of viewpoints.

The cases comprising this series were unselected. Every patient given spinal anesthesia in the hospital was included, and as soon as 500 consecutive patients had received a particular drug, another drug was substituted and the next 500 cases collected. This continued until the entire series of 2500 patients had been observed. Because of the nature of the surgical admissions, the types of cases were remarkably constant throughout the year and each group of 500 patients represented a fairly predictable series as far as operative procedures were concerned.

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Only one dosage of the various pressor drugs was used with the exception of methedrine where either 20 or 30 mg. was administered. Statistical analysis of the results showed no significant difference between the response to 20 and 30 mg. of methedrine. Ephedrine sulfate was administered in 50-milligram doses; paredrine in 10-milligram doses; and the combination of pitressin-ephedrine included 10 units of pitressin and 50 mg. of ephedrine. All drugs were injected into the erector spinae muscles from 3 to 10 minutes prior to the injection of the anesthetic agent into the subarachnoid space.

The results of this study conclusively demonstrate that pressor drugs can prevent to a large degree the fall in blood pressure commonly experienced during spinal anesthesia.

In the five hundred patients who received no pressor drug prior to anesthesia, the average fall in systolic blood pressure was 36 per cent from the preoperative level. In the five hundred patients who received paredrine for the maintenance of blood pressure, the average pressure fall was 18.6 per cent. Five hundred patients given ephedrine showed an average decrease of 14.5 per cent. Five hundred patients administered methedrine showed a 3.0 per cent decrease in systolic blood pressure. Methedrine and pitressin-ephedrine were, therefore, most effective.

Methedrine is preferred to the combination of pitressin-ephedrine for a variety of reasons. Methedrine is administered intramuscularly in doses of 20 mg. at the time of lumbar puncture. The onset of action is prompt and the duration is prolonged.

The incidence and degree of the decrease in blood pressure which follows spinal anesthesia is greater with higher levels of anesthesia in older individuals, and in patients with initial blood pressures which are above normal. There is no difference in vascular response when procaine and pontocaine are used as spinal anesthetic agents. (Surg., Gynec. and Obst., Sept. '46)

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Changes in Lens of Embryo after Rubella in the Mother: Since the publication of Gregg's paper on congenital cataract following rubella in the mother, the condition has been observed and reported a sufficient number of times to establish it as an entity. The histologic changes in the lens of an embryo after rubella have not been previously described in the literature.

Up to the present time, 170 cases of rubella during pregnancy have been reported, in 125, or 73 per cent, of which congenital defects of the

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lens occurred in the child. In all these 125 cases the mother contracted rubella during the first three months of pregnancy. In no instance in which an ocular defect occurred was the attack of rubella reported to have occurred after the third month.

A single eye of an 8-week-old embryo, the mother of which had had rubella during the sixth week of pregnancy, was received recently at the Ophthalmologic Laboratory of the University of California. It was felt that a histologic study of this specimen might shed light on the question of the initial action of the causative agent of rubella on the lens.

Microscopic examination of this eye revealed definite changes in the lens. The lens showed retardation of development and differentiation, while the posterior segment of the eye seemed normal.

The absence of the protection of the lids and of Descemet's and Bowman's membranes during the first three months of pregnancy may permit the toxic agent in the amniotic fluid to act fairly directly on the lens during this time.

The presence of these barriers after the third month may explain the absence of changes in the lens resulting from infection of the mother after that time.

The authors state that the study of more specimens is necessary in order to evaluate the changes reported in their paper. (Arch. Ophth., Aug. '46 - Cordes and Barber)

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The Similarity of the Effects of Podophyllin and Colchicine and Their Use in the Treatment of Condylomata Acuminata: The drug podophyllin, after having been dropped from the official list of cathartics in the Pharmacopeia, has become of renewed interest in dermatology. Kaplan reported very satisfactory clinical results through the use of podophyllin in oil as a topical application in the treatment of condylomata acuminata. Clinical studies by the authors (See Bumed News Letter of 13 September 1946) have fully confirmed the efficacy of the drug.

Podophyllin, when applied to normal human and rabbit skin, causes unusual changes in the epidermis. There is alteration of nuclear pattern leading to the breakup of chromatin masses and the production of varying-sized pyknotic fragments. In some cells the disintegrating chromatin resembles markedly distorted mitotic figures, principally but not exclusively, in the metaphase. Changes

occurring in the cytoplasm in different cells consist of spongy swelling, shrinkage from the cell membrane, hydrops, delicate fibrillation, and alterations of staining reactions. The authors designate such altered cells as "podophyllin cells."

In many rabbits practically every cell in the epidermis of the area treated discloses these severe nuclear and cytoplasmic alterations. The changes are transitory, and an essentially normal epidermis is re-established in from four to six days after a single application. No increase in effect is shown after repeated applications. On the contrary, a resistance seems to be established, and the histologic appearance following 20 applications is less striking than that following a single application. There has been no discernible evidence of cumulative effects in the experiments thus far undertaken.

Histologic examination of acuminate condylomas in the process of involution following applications of podophyllin reveals numerous "podophyllin cells" of the type readily observed in the experimental material. In addition, there are widespread, nonspecific, degenerative changes in the epithelial cells.

The "podophyllin cells" were found to resemble the so-called "colchicine figures" described in the literature. Because of this likeness, suspensions of colchicine in oil were tried in the treatment of condylomata acuminata, and the clinical results were found to be superior to those from the use of podophyllin. Colchicine in oil applied in the same manner as podophyllin to rabbit skin resulted in pathologic alterations identical with the podophyllin effects, but more intense and of briefer duration.

Previously, in the experimental use of colchicine, the drug has been injected parenterally, and its effect on various organs has been found widespread. Its action has been considered to be the arrest of mitosis in the metaphase. In the present work, the changes resulting from the application of colchicine and podophyllin to the unbroken skin, do not suggest this mode of action. There is some direct, immediate, degenerative action, with resultant cell death. Other changes can be interpreted as a preliminary stimulation of mitosis, with marked distortions of the mitotic figures.

The differences between colchicine injected subcutaneously and colchicine applied locally can probably be attributed to the greater local concentration attainable with the latter method. It is of interest that podophyllin and colchicine are essentially without effect when applied to verrucae vulgares or other extensively keratinized lesions. This suggests that the penetrating power of the drugs is slight.

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It is known that compounds unrelated to colchicine have actions similar to those of colchicine. Ludford mentions auramine, urethane, and sodium cacodylate as producing, on injection, the same effects as colchicine. Podophyllin, by local application, is now shown to produce results apparently the same as colchicine produces.

Detailed descriptions of the clinical and pathological studies will be reported. (Science, Sept. 13, '46 - King and Sullivan)

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Chemotherapy of Experimental Anthrax Infections: At Camp Detrick, Frederick, Maryland, Miller et al. conducted studies to evaluate the efficacy of streptomycin, penicillin, and sulfadiazine in the treatment of anthrax infections in a suitable test animal under comparable experimental conditions. A single virulent strain of Bacillus anthracis spores was used. Penicillin had already been demonstrated to be somewhat effective.

The experimental procedure constituted a rigorous test of a therapeutic agent against a well established and highly fatal anthrax infection in mice. The results of the investigation indicated that streptomycin was highly effective in doses of from 800 to 1600 micrograms daily per mouse weighing from 18 to 22 grams. It is of interest that this dosage, when calculated on a per kg. basis, is within the limits of maximum dosage used in man for the treatment of other infectious diseases. Maximal survival rates were 92 per cent. Higher survival rates in mice were obtained with streptomycin treatment than with penicillin in doses ranging from 625 to 10,000 units daily per mouse.

For penicillin, all dosage schedules tested appeared equally effective. The results compared closely with those reported by Heilman et al. Quantities below 625 units daily were not administered, but might conceivably have been as effective. Since the dosage of 10,000 units of penicillin exhibited definite toxicity in normal mice, higher levels of this drug were not tried. On a per kg. basis, the doses employed were larger than the usual amounts given therapeutically in man. The maximal survival rates were 58 per cent.

Sulfadiazine in amounts considered optimal in treatment of other infections was only slightly effective in the treatment of anthrax infection. This was evidenced by the fact that although life was somewhat prolonged, only a few of the infected animals survived. The maximal survival rates were 5 per cent.

Anthrax bacilli in large numbers were found in 96 per cent of all the infected-untreated animals dying of anthrax. On the other hand, in only 48 per

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cent of the infected-treated animals from all experiments were anthrax bacilli found, and in these the number of organisms was considerably diminished as compared with that of untreated animals. These findings indicate that the drugs, especially the antibiotics, exerted either a bactericidal or marked bacteriostatic effect. The fact that a large percentage of the treated animals which died were negative to culture suggests that in these animals the infecting organisms were eradicated but not until after they had caused irreparable changes that led to the death of the experimental hosts.

The results obtained in these experiments indicate that latent infections were not present in treated mice surviving at the end of the observation period, since in all of these animals cultures and smears were invariably negative for anthrax bacilli. (J. Immunol., Aug. '46)

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Efficacy of a DDT Emulsion as a Dip for the Control of Lice on Goats: About 450 goats, chiefly of the Angora breed, were dipped in an aqueous emulsion containing 0.25 per cent DDT, 2.5 per cent xylene, and 0.6 per cent soap. Practically all of the animals were heavily infested with lice (Bovicola limbatus Gerv.) in all stages of development.

Examination 72 hours after treatment showed that complete kill of the lice had been obtained on all of the goats. Fifteen weeks later only 7 out of 364 goats were reinfested, and these very lightly.

The emulsion employed showed no important toxic effects on the animals; eye inflammation, where it occurred, was temporary and of no consequence. A preliminary test, however, using a more concentrated emulsion, had indicated that a 10 per cent xylene content caused the animals to go into convulsions. (N.R.C. Abstract Bull. #41, Series A, of the Insect Control Committee Coordination Center)

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Effects of DDT on Fish and Wildlife: Field observations on the damage caused by DDT to fish and wildlife were made in 12 states of the United States and the Province of Ontario. The forest lands in Maryland constituted the principal area of investigation to determine the effects of DDT on vertebrates and invertebrates. Application of DDT was made chiefly as an oil spray by airplane, with spray concentrations ranging from one-fifth pound to five pounds per acre. The amount of DDT reaching the ground varied with the density of vegetation. No significant mortality of the short-tailed shrew and deer mouse was

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noted in field tests. Invertebrates, fishes, and other cold-blooded vertebrates were more readily affected than were birds and mammals. Frogs and large frog-tadpoles were killed in deep ponds treated at the rate of five pounds of DDT per acre, and in shallow ponds with applications of one pound per acre. At Island Beach, N.J., after application of one-half pound of DDT per acre, 100,000 small dead fishes were estimated along five miles of the bay shore. In the laboratory, fish were usually killed by single doses of DDT as low as 5 mg. per kg. of body weight. In Lackawana County, Pennsylvania, a census of birds on a 40-acre tract that received a five-pound dosage to the acre showed five dead birds and two abandoned nests.

It is stated that the use of DDT for the control of an insect pest should only be considered after weighing the value of such control against the harm that will be done to beneficial forms of life. Where more than a small area is involved, County Agricultural agents, State and Federal entomologists, wildlife and fishery biologists, and the U. S. Public Health Service officials should be consulted. (U.S. Dept. of Interior, Fish and Wildlife Service, Circular 11 1946 - Cottam and Higgins)

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Mass Immunization of a Force in the Field Against Diphtheria: The British Army Pathology Advisory Committee recently had under consideration the immunization of a large field force against diphtheria. Under normal conditions this would be done by carrying out a preliminary Schick test and thereafter immunizing those who were Schick-positive, using for preference toxoid-antitoxin floccules (T.A.F.), as this antigen is known to cause less reaction than alum-precipitated toxoid (A.P.T.) or simple formolized toxoid. In the existing circumstances it was not a practical proposition to Schick-test the force, and the only antigen available in sufficient quantity was A.P.T. It was, therefore, decided to carry out a limited trial to determine if it was possible to eliminate those likely to develop severe reactions by observing the results of an initial dose of 0.01 c.c. of A.P.T., and excluding from further immunization any who showed an excessive response thereto. Such a scheme seemed justifiable because it is known that the majority of those who react to the diphtheria antigens belong to the Schick-negative category; those who are Schick-positive normally show little reaction.

Summary and Conclusions: Schick-testing a field force under active-service conditions as a preliminary to immunizing against diphtheria is not a practical proposition.

An attempt to assess the value of a small dose - 0.01 c.c. - of A.P.T. given subcutaneously as a screening test to exclude those likely to react

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severely to immunizing doses of this prophylactic did not achieve its purpose, and left undetected a considerable number of reactors. The majority of these were Schick-negatives, with nothing to gain from immunization. Therefore, mass immunization with A.P.T. without previous Schick-testing is considered unjustifiable.

Schick-testing of recruits on enlistment, followed by the immunization of susceptibles, is considered to be the solution of the Army problem. (Lancet, Aug. 10, '46 - Boyd)

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Re Mites and Asthma: The association of mites and asthma has in recent years aroused considerable interest. Attention has been drawn to the findings of workers in Ceylon, that mites were present in the sputum of certain cases of tropical eosinophilia. This condition is also referred to as "eosinophilic bronchitis," "eosinophil lung," and "pseudo-tuberculosis." It appears particularly in India and Ceylon, and is characterized by asthma or bronchitis with an exceptionally high eosinophil count, and at times a certain appearance of the lungs roentgenographically; it is cured by arsenic. A second article by Carter and D'Abrera describes their findings in twenty-five such cases in Ceylon. Mites were detected in the sputum in every patient, none had an eosinophil count of less than 3,000 per c.mm., and a response to arsenic occurred in all patients except one. The mites seem to live in the bronchial tree. It is suggested that they are responsible for the asthma and eosinophilia, and that the arsenic effects a cure by their destruction. As the authors point out, further observations are necessary. It would be of interest to know whethe mites occur in the sputum of apparently healthy people in Ceylon. (Editorial in Brit. M. J., Aug. 31, '46)

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The Utilization of Aluminum in the Prevention and Treatment of Silicosis: Aluminum therapy in silicosis is based upon the hypothesis (of Gye and Purdey) that the chemical action rather than the physical irritation produced by silica is the cause of silicosis.

Experimental work, based upon the chemical theory of silicosis, has demonstrated that certain substances adsorbed on the surface of the silica particle prevent its usual toxic action. The first substance found to have this action was a colloidal solution of "Iron Hydroxide." Later it was found that metallic aluminum, or a specially prepared and stable amorphous hydrated alumina (alumina is aluminum oxide - Al_2O_3), had a similar and better action when intimately mixed with the silica in the lung.

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The application of these facts in an extended series of animal experiments n Canada and the United States has demonstrated conclusively that (1) alumi- ıum will prevent silicosis; (2) progression of immature lesions can be a r - ·ested; (3) there is resolution of the early inflammatory response to silica; ınd (4) there is no apparent effect on the fibrotic nodule.

Clinical application of the knowledge gained from animal experiments in- ɔlves, in addition, the recognition of the many variables found in industrial ɔlants, where concentrations of silica dust in the atmosphere are capable of ɔroducing disease.

These variables consist primarily in the following: (1) the amount of dust .n the atmosphere of the working area, the percentage of silica in the atmos- ɔheric dust, the particle size of the silica, the admixtures of other dusts that may accelerate or inhibit the action of the silica; (2) the peculiarities of the individual workman, whether they be anatomic or functional, may predispose him to increased retention of silica dust in the lungs.

The prevention of silicosis depends upon (1) dust control, (2) medical control, ınd (3) in certain cases, the use of aluminum and its compounds. Dust control ɔonsists essentially in minimizing the amount of dust produced and exhausting the dust which is produced to the practical economic minimum. The complete eradication of silica from the working atmosphere, so far as that is practical, is the best treatment for silicosis. Medical control consists of pre-placement ınd periodic physical examinations with x-rays of the chest, and laboratory work as indicated. All recognized measures for the control of tuberculosis in the plant and community should be used. Aluminum or its compounds should only be employed to take care of that amount of silica dust in the working atmos- phere that cannot be removed by an economically practical dust control program.

The aluminum powder used in the prevention and treatment of silicosis is of extreme fineness. Ninety per cent of the particles are below one-half micron, and approximately 30 per cent are below 500 Angstrom units. The ɔowder must be of such size and concentration that it can get into the same ɔell that contains the silica.

The powder is administered by inhalation because the inactivation of the silica depends upon an intimate contact with its neutralizing agent.

In a recent study of 46 ceramic workers suffering from silicosis with moderate to severe disability, 36 or 78 per cent showed an improvement in subjective symptoms after aluminum therapy. The men were studied through ɔareful histories, by physical examination, by roentgenograms of the chest, and by

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lung function tests prior to and three months after treatment had been discontinued. The men were treated three times a week for 40 treatments and with a maximum treatment period of eight minutes. Of the 36 men who noticed a subjective improvement, studies of their maximum respiratory effort made after treatments had been discontinued revealed improvement as follows: in 8, from 20 to 30 per cent; in 6, from 30 to 40 per cent; in 4, from 40 to 50 per cent; in 5, from 50 to 75 per cent; and in 6, over 75 per cent. Similar results have been obtained from other studies.

Aluminum therapy, while not a substitute for an engineering and medical control program, is an aid to our present means of controlling silicosis. The function of aluminum therapy is to take care of that amount of dust that cannot be removed by a practical economic dust control program. The use of aluminum in workmen suffering from silicosis with disability results in an improvement or disappearance of subjective symptoms and a measurable improvement in objective findings in a significant percentage of cases. It is the only therapeutic method at present offering any hope for combatting successfully the ravages of this disease. (Indust. Med., Sept. '46 - Hannon)

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Use of Sodium Azide in Isolation of Gram-Positive Cocci: In 1940 and 1941, Snyder and Lichstein described a medium containing sodium azide which facilitated the isolation of Gram-positive cocci from material in which there were large proportions of Gram-negative bacilli. Sodium azide blood agar, streaked with feces, showed growth with an almost complete reversal of the bacillus-coccus ratio usually seen on ordinary media. It was believed that this medium would prove especially useful in studying the Gram-positive flora of the intestinal tract. This medium was early adopted by the author who found that it inhibited most of the Gram-negative bacilli encountered in medical bacteriology and that, through its use, staphylococci, streptococci, and micrococci could be isolated from mixtures of Escherichia coli, Aerobacter aerogenes, Pseudomonas aeruginosa, Proteus vulgaris, Serratia marcescens, and unidentified Gram-negative soil bacteria.

Sodium azide (obtainable from Eastman Kodak Co., Rochester, N.Y.) made up in 1 per cent solution can be autoclaved and kept in the icebox for long periods of time with little danger of contamination. To prepare a single plate the author uses 0.5 c.c. of defibrinated rabbit blood, 0.17 c.c. of the sterilized 1 per cent sodium azide solution (which is slightly less than the maximum critical concentration), and 9.5 c.c. of melted and cooled agar (usually Difco's Blood Agar Base). The sodium azide and blood are placed in

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separate areas in a sterile Petri dish, the agar is poured into the plate, and the contents are mixed thoroughly by shaking. The sodium azide causes a slight hemolysis of the blood, giving the medium a brown appearance. On this medium beta streptococci have a characteristic greenish tinge, while alpha streptococci appear as brownish colonies. Streptococci may be taken off and cultured in a deep, plain blood agar plate for determination of hemolysis. If Gram-negative bacilli persist, as they may when in heavy concentrations, enough streptococci can be taken from the sodium azide plate, diluted and plated again on a fresh sodium azide plate. This second plating is almost always successful in the isolation of the cocci. (Am. J. Clin. Path., July '46 - Schwarting)

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Total Pancreatectomy for Carcinoma of the Pancreas in a Diabetic Person: Dixon et al., of the Mayo Clinic, report on a series of studies carried out on a patient who had been diabetic and then developed a pancreatic carcinoma for which a total pancreatectomy was performed. At the time when the paper was written, twelve months after operation, the patient was living and well.

These studies on the effect of the lack of internal and external secretions of the pancreas in a totally depancreatized human being were performed as a pilot study for future work on the problem. From the cases of pancreatectomy presented in the literature and from those in which it was performed at the Mayo Clinic, it would seem that a depancreatized adult requires about from 20 to 70 units of insulin daily during the first week or so after operation and about from 25 to 40 units daily for maintenance thereafter. Whereas the severity of diabetes may be determined superficially by the amount of insulin needed for a given degree of control, the tendency of persons who have diabetes mellitus toward the development of ketosis varies tremendously. In the patient studied following total pancreatectomy, during two periods of insulin deprivation of eighty-nine hours each, when 440 Gm. of carbohydrate were given, the ketonemia was slight, and when 125 Gm. were given the ketonemia was pronounced.

The bulkiness of the stools was reflected in abnormally high values for their dry weight. Fat and protein in the feces accounted for most of their dry weight.

Total pancreatectomy was followed by considerable reduction in the digestion and absorption of protein and fat. About a half of the ingested fat and about a third of the ingested protein were lost in the feces. Despite the large amount of fat in the stools, diarrhea did not occur. Digestion of fat was surprisingly good, as only about a third of the fat in the feces was neutral fat.

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The absorption of calcium and phosphorus was apparently adequate in spite of the high loss of foodstuffs in the stools.

Concentrated pancreatin in enteric-coated tablets (15 with each meal, or 15 Gm. daily) was found to reduce the loss of fat and protein by approximately 50 per cent. It also reduced the dry weight of the feces and altered the gross appearance of the stool. Concentrated pancreatin reduced the loss of calories sufficiently to cause the patient to gain weight slightly over the short period of study. The amounts of fat and nitrogen lost in the feces even when pancreatin was given were in excess of normal values. Although concentrated pancreatin in the amounts given was not a complete substitute for external pancreatin secretion, it was definitely valuable in maintaining the nutrition of the patient.

During the observation period of eight months, following total pancreatectomy, hypolipemia and hepatic dysfunction indicative of a fatty liver did not occur, as is often the case in pancreatectomized dogs. The patient's diabetes remained of about the same severity, the protamine zinc insulin requirement being approximately 40 units a day. Hepatic function as measured by the bromsulfalein test remained unimpaired throughout the eight months of observation, and hyperlipemia rather than hypolipemia appeared. The patient remained in good health and maintained his weight while taking a mixed diet plus insulin and 10 Gm. of concentrated pancreatin. (Arch. Surg., June '46)

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Abstracts of Reports on Research Projects:

X-205
Rep. No. 5
9 April '46

The Influence of Weather, Combat Status, and Overcrowding on the Incidence of Disease and Accidents Aboard Naval Vessels.

The influence of weather, combat, and overcrowding on the rate of incapacitation from disease and accidents aboard nine ships of the line has been studied using the daily Navigational Log, War Diary, and the Monthly Report of Sick (NMS-Form F). Most of the major types of vessels are represented: one old and one new battleship, one old and one new heavy cruiser, one old and one new light cruiser, one escort carrier, and two destroyers. All ships considered had seen extensive and varied duty in the period 1941-1944.

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X-205 (Cont.)

It must be emphasized that although the results are tentative, they are suggestive enough to justify more extensive future work. They may best be summarized in the following table:

	OPERATIONAL CONDITION		
	Weather	Combat	Overcrowding
Respiratory diseases	Characteristic sequences of weather are strongly associated with "spurts" of these diseases. Greater incidence in steady cold weather than in steady hot weather.	No observable effect.	Substantial increases in personnel are associated with "spurts" of these diseases. No long term effect from overcrowding
Gastrointestinal diseases	Slightly higher incidence during months of steady hot weather	No observable effect.	No observable effect.
Skin diseases	Very slight association with hot weather.	No observable effect	Substantial increases in personnel are associated with "spurts" in these diseases. No long term effect from overcrowding.
Accidents	Slightly higher incidence during months of steady hot weather.	Very slight association.	Substantial increases in personnel are associated with "spurts" in the rate of incidence. No long term effect from overcrowding.

In studying the effects of weather on accidents or on disease, it is considered that shipboard data have an advantage over vital statistics ashore, since to a large extent the complicating factors of socio-economic status and of season are avoided. (Nav. Med. Res. Inst., NNMC, Bethesda, Md. - Morales and Tarver)

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X-524 Rep. No. 2 24 June '46

The Increase in Hypoxia Tolerance of Normal Men Accompanying the Polycythemia Induced by Transfusion of Erythrocytes.

An artificial polycythemia was induced in a group of five

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X-524 (Cont.) normal young men by the transfusion of 2000 c.c. of a 50 per cent suspension of compatible erythrocytes in glucose and saline solution at a rate of 500 c.c. per day for four days. The mean hematocrit value for the group was increased from 46.2 to 58.3 per cent. The polycythemia was well tolerated and lasted for approximately 50 days.

Biochemical and physiological studies were made on this group and compared with similar studies made simultaneously on a control group of five men who had received transfusions of glucose and saline solution totalling 2000 c.c.

The arterial oxygen content of the erythrocyte-transfused subjects was increased proportionately to the increase in oxygen capacity. The percentage of saturation of their blood with oxygen was the same as that of the control subjects. This was true both at sea level and at a simulated altitude of 15,500 feet.

Tolerance to hypoxia was estimated on the basis of the pulse rate during exercise under conditions of lowered oxygen tension. It was found that during exercise the pulse rate of the transfused group in the week following the transfusions dropped sharply and then gradually returned to the level of the control group as the cell count decreased. It was possible to estimate from these measurements that during the first week of polycythemia the pulse rate of the transfused subjects when at a simulated altitude of 15,500 feet corresponded with that of a control group at only 10,300 feet.

It is concluded that the polycythemia induced artificially in this experiment and the polycythemia which occurs during acclimatization to high altitudes are very similar. Therefore, the latter must play an important part in the attainment of acclimatization, and may represent the bulk of the acclimatization process. (Nav. Med. Res. Inst., NNMC, Bethesda, Md. - Pace et al.)

Note: Those interested in seeing copies of the complete reports should address their request to the Research Division, BuMed.

Opinions or conclusions contained in these reports are those of the authors. They are not to be construed as necessarily reflecting the views or the endorsement of the Navy Department. Reference may be made to those reports marked "Not Restricted" in the same way as to published articles noting authors, title, source, date, project number, and report number.

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Progress Report on the Residency-Type Training Program in U. S. Naval Hospitals: The Bureau of Medicine and Surgery of the Navy Department is pleased to announce the appointment of approximately 150 outstanding consultants to the various U. S. Naval Hospitals in connection with the supervision and management of the Residency-Type Training Program recently inaugurated for the purpose of affording Naval medical officers the opportunity to train in medical specialties leading to American Board certification and Fellowship in the American Colleges. The consultants will direct the teaching program in the several specialties in the services approved by the American Specialty Boards. This residency-type training under the supervision of the consultants has begun at several U. S. Naval Hospitals, and when in full operation, the many phases of the program will have been expanded to include as sites of training the U. S. Naval Hospitals at Bethesda, Maryland; Chelsea, Massachusetts; Great Lakes, Illinois; Long Beach, California; Oakland, California; Philadelphia, Pennsylvania; San Diego, California; and St. Albans, Long Island, New York.

The Navy has approximately 200 residencies which bear the approval of the American Specialty Boards These instructional assignments are available to medical officers of the regular Navy. Plans are being formulated to allow to medical officers of the U. S. Naval Reserve the benefits of this residency-type training in certain Naval medical facilities.

Thus far, 72 medical officers have been placed under orders for assignment to approved residency-type training in Naval Hospitals. As far as practicable, it is contemplated that residencies will be filled in one hospital at a time in order that the Training Program may be carried on simultaneously in a coordinated effort within each hospital. This method of commencement for the program will allow a necessary flexibility in order that medical officers may be ordered to residency-type training as they become available and eligible for this level of graduate work. In the majority of cases, medical officers are ordered to Naval Hospitals as they complete sea duty or duty with the U. S. Marine Forces and duty beyond the continental limits of the United States. In this manner, the residency-type training will begin in additional Naval Hospitals according to schedule as candidates become available and are assembled for assignment to respective courses.

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The listing set forth below shows the residency-type training assignments undertaken by the Bureau of Medicine and Surgery to date in the administration of this program:

NAME	RANK AND CLASSIFICATION	NAVAL HOSPITAL	SPECIALTY TRAINING
BACHMAN, Kenneth P.	Lieut. (MC) USN	St. Albans	Int. Med.
COOPER, Henry R.	Lieut. (MC) USN	Bethesda	Int. Med.
ERRION, Arthur R.	Lieut. (MC) USN	Chelsea	Int. Med.
FLECK, Robert L.	Lieut. (MC) USN	Bethesda	Int. Med.
HALLBORG, Robert B.	Lt.Cdr. (MC) USNR	St. Albans	Int. Med.
JARUSZEWSKI, Edward J.	Comdr. (MC) USN	Great Lakes	Int. Med.
LAWLER, Arthur L.	Comdr. (MC) USN	San Diego	Int. Med.
MOORE, Paul T.	Comdr. (MC) USN	Chelsea	Int. Med.
REITZ, Harvey E.	Comdr. (MC) USN	Long Beach	Int. Med.
SMALL, Milton M.	Lieut. (MC) USN	Chelsea	Int. Med.
TARR, George H., Jr.	Lieut. (MC) USN	Chelsea	Int. Med.
WETZEL, Frederick B.	Lieut. (MC) USN	Bethesda	Int. Med.
HIGHTOWER, David P.	Comdr. (MC) USN	Bethesda	Neuro-Psychiat
VAN BUSKIRK, Gordon P.	Lt.(jg) (MC) USN	Philadelphia	Neuro-Psychiat
BLACK, Boyd K.	Lieut. (MC) USN	Bethesda	Path.&Lab.Proc
FIX, Lester W.	Lieut. (MC) USN	Bethesda	Path.&Lab.Proc
KNUDTSON, Kenneth P.	Lt.Cdr. (MC) USNR	Bethesda	Path.&Lab.Proc
RAFTERY, Alan	Lieut. (MC) USN	Oakland	Path.&Lab.Proc
RICHARDSON, James L.	Lt.Cdr. (MC) USN	Oakland	Path.&Lab.Proc
TURNER, James A.	Lt.Cdr. (MC) USN	Bethesda	Path.&Lab.Proc
BROOKS, Ralph K.	Lieut. (MC) USN	Philadelphia	Obst. & Gynec.
HANSON, Walter N.	Comdr. (MC) USN	Philadelphia	Obst. & Gynec.
HUNTER, Henry J.	Comdr. (MC) USN	Chelsea	Obst. & Gynec.
HUSTON, J. Wilson	Lt.Cdr. (MC) USN	Brooklyn	Obst. & Gynec.
MC NULTY, James V.	Lieut. (MC) USN	Long Beach	Obst. & Gynec.
PEASE, John A.	Lieut. (MC) USN	Oakland	Obst. & Gynec.
REIST, Vorris M.	Lieut. (MC) USNR	Chelsea	Obst. & Gynec.
RONNIGER, Paul C.	Lieut. (MC) USN	Oakland	Obst. & Gynec.
RUSHER, Merrill W.	Lieut. (MC) USN	Great Lakes	Obst. & Gynec.
SIMPSON, Alan C., Jr.	Lt.Cdr. (MC) USN	Brooklyn	Obst. & Gynec.
SULLIVAN, Mervyn J.	Lieut. (MC) USN	San Diego	Obst. & Gynec.
TRUE, DeWitt S.	Lieut. (MC) USN	Chelsea	Obst. & Gynec.
SATALOFF, Joseph	Lieut. (MC) USN	Philadelphia	Otolaryng.
SCHIFF, Maurice	Lieut. (MC) USN	Philadelphia	Otolaryng.
REDDY, John B.	Lieut. (MC) USN	Oakland	Otolaryng.
NADBATH, Rudolph P.	Lieut. (MC) USN	Long Beach	Ophthalmology
*MILLS, Dawson A.	Comdr. (MC) USN	Chelsea	Ophthalmology
*OLIVER, Samuel H.	Comdr. (MC) USN	Chelsea	Ophthalmology
DUFFALO, John A., Jr.	Lt.Cdr. (MC) USN	Oakland	Ophthalmology
BACON, Joseph C.	Lieut. (MC) USN	San Diego	Radiology
CLAUD, Phillips L.	Comdr. (MC) USN	Philadelphia	Radiology
DAUGHTRIDGE, Griffin C.	Capt. (MC) USN	Philadelphia	Radiology

NAME	RANK AND CLASSIFICATION	NAVAL HOSPITAL	SPECIALTY TRAINING
MACKLIN, Martin T.	Comdr. (MC) USN	Philadelphia	Radiology
RUOFF, Frederick A.	Lt.Cdr. (MC) USN	Great Lakes	X-Ray
ALLEN, Robert G.	Lieut. (MC) USN	Chelsea	Gen. Surg.
CHRISTOPH, Robert F.	Lt.Cdr. (MC) USN	Great Lakes	Gen. Surg.
CUMMINGS, Gerald E.	Comdr. (MC) USN	Chelsea	Gen. Surg.
DOBOS, Nicholas E.	Comdr. (MC) USN	Oakland	Gen. Surg.
GREEN, John R.	Lieut. (MC) USN	Oakland	Gen. Surg.
GREEN, Robert B.	Lt.(jg) (MC) USNR	Long Beach	Gen. Surg.
HASCALL, Charles S., Jr.	Comdr. (MC) USN	Chelsea	Gen. Surg.
MACKIE, Robert W.	Lt.(jg) (MC) USNR	St. Albans	Gen. Surg.
NOVA, Philip L.	Lt.Cdr. (MC) USN	Oakland	Gen. Surg.
PACKARD, James W., Jr.	Lt.Cdr. (MC) USN	St. Albans	Gen. Surg.
REID, Robert W.	Lt.Cdr. (MC) USN	Bethesda	Gen. Surg.
RHEA, Mark R.	Comdr. (MC) USN	San Diego	Gen. Surg.
RICE, Moses E., Jr.	Lieut. (MC) USNR	Philadelphia	Gen. Surg.
RIORDAN, Emmett J.	Lt.Cdr. (MC) USN	Oakland	Gen. Surg.
ROMMEL, Richard W.	Comdr. (MC) USN	St. Albans	Gen. Surg.
STROTHER, Robert B.	Comdr. (MC) USN	Great Lakes	Gen. Surg.
WERTHEIMER, Haskell M.	Lieut. (MC) USN	Long Beach	Gen. Surg.
WISSINGER, Donald O.	Capt. (MC) USN	Great Lakes	Gen. Surg.
GARRITY, Richard W.	Comdr. (MC) USN	Chelsea	Neuro-Surg.
BANKS, Lawrence E.	Lieut. (MC) USN	Oakland	Orthoped. Surg.
CANNON, Faheam (n)	Lt.Cdr. (MC) USN	Chelsea	Orthoped. Surg.
CHEFFEY, John H.	Lieut. (MC) USN	Chelsea	Orthoped. Surg.
GRANNIS, William R.	Lieut. (MC) USN	Chelsea	Orthoped. Surg.
LEWIS, Owilym B.	Lt.Cdr. (MC) USN	Oakland	Orthoped. Surg.
MATTICK, Irvin H.	Lieut. (MC) USN	Great Lakes	Orthoped. Surg.
BLANCH, Joseph J.	Comdr. (MC) USN	Chelsea	Urology
ROBIE, William A.	Lt.Cdr. (MC) USN	Philadelphia	Pediatrics

***7 Mos. Residency-Type Training in Ophthalmology at USNH, Chelsea, Mass., to be followed by an additional 5 Mos. Duty-under-Instruction at Harvard University Medical School.**

In addition to the Residency-Type Training Program, the Bureau of Medicine and Surgery maintains in Naval Hospitals and in other Naval activities a constant level of medical officers designated for training in a "duty-under-instruction" status. Although they are for the most part devoted to the same branches of specialty training, the courses pursued by this group of medical officers are of a lesser duration than that established for the courses in the residency-type training program. It is contemplated, however, that a number of these courses will be incorporated into the major program by the extension

of the course along with the progress and expansion of the residency-type training program.

Seventy medical officers are now undergoing training in Naval facilities in a "duty-under-instruction" status. The following is a list of those now assigned to that training:

NAME	RANK AND CLASSIFICATION	ACTIVITY	SPECIALTY TRAINING
BROKER, Henry M.	Lt.(jg) (MC) USNR	NAS Pensacola	Aviat. Med.
COURTNEY, Marvin D.	Lieut. (MC) USN	NAS Pensacola	Aviat. Med.
DE WILTON, Edward L.	Lieut. (MC) USNR	NAS Pensacola	Aviat. Med.
JONES, Leland W.	Lt.(jg) (MC) USNR	NAS Pensacola	Aviat. Med.
LANDRUM, Louis G.	Lt.(jg) (MC) USNR	NAS Pensacola	Aviat. Med.
MC ARTOR, James R.	Lieut. (MC) USN	NAS Pensacola	Aviat. Med.
MILLER, Claude H., Jr.	Lt.(jg) (MC) USNR	NAS Pensacola	Aviat. Med.
MONTGOMERY, Daniel C., Jr.	Lt.(jg) (MC) USNR	NAS Pensacola	Aviat. Med.
SIEGEL, Peter V.	Lieut. (MC) USN	NAS Pensacola	Aviat. Med.
WILSON, Charles H.	Lieut. (MC) USN	NAS Pensacola	Aviat. Med.
CREGG, Hugh A., Jr.	Lt.(jg) (MC) USNR	NAS Pensacola	Flight Surg.
DAVIE, Victor V.	Lieut. (MC) USN	NAS Pensacola	Flight Surg.
EASTMAN, Gerald M.	Lieut. (MC) USN	NAS Pensacola	Flight Surg.
GOBEILLE, Alfred B.	Lt.(jg) (MC) USNR	NAS Pensacola	Flight Surg.
GOODMAN, Clifford S., Jr.	Lt.(jg) (MC) USNR	NAS Pensacola	Flight Surg.
SCHEWE, William J.	Lt.(jg) (MC) USN	NAS Pensacola	Flight Surg.
BRODY, Sidney I.	Lt.Cdr. (MC) USN	NAS Corpus Christi	Nav. Aviator
SIMS, Lewis S., Jr.	Comdr. (MC) USN	NAS Corpus Christi	Nav. Aviator
BEAHM, Anol W.	Lieut. (MC) USN	NMS Bethesda	Basic Course
BRATENAHL, Charles G.	Lieut. (MC) USN	NMS Bethesda	Basic Course
CLARK, Gale G.	Lieut. (MC) USN	NMS Bethesda	Basic Course
HENDERSON, Edmund M.	Lieut. (MC) USN	NMS Bethesda	Basic Course
KUBER, Matthew E.	Lieut. (MC) USN	NMS Bethesda	Basic Course
NEIKIRK, William I.	Lieut. (MC) USN	NMS Bethesda	Basic Course
PARKS, Lytle R., Jr.	Lt.(jg) (MC) USNR	NMS Bethesda	Basic Course
RIDDER, William	Lieut. (MC) USN	NMS Bethesda	Basic Course
SHAPARD, Edwin R., III	Lt.(jg) (MC) USN	NMS Bethesda	Basic Course
SKIPPER, William G.	Lieut. (MC) USN	NMS Bethesda	Basic Course
NEW, William N.	Comdr. (MC) USN	NH Philadelphia	Derm. & Syph.
DINSMORE, William A., Jr.	Lt.Cdr. (MC) USN	NH Bethesda	Int. Med.
GRAHAM, Bothwell, III	Lt.Cdr. (MC) USN	NH NB Norfolk	Int. Med.
WILSON, William W.	Lieut. (MC) USN	NH Philadelphia	Int. Med.
ALDEN, Manning W.	Lieut. (MC) USN	NMS Bethesda	Path.&Lab.Proc
ALLEGRETTI, Michael L.	Lieut. (MC) USN	NH Great Lakes	Path.&Lab.Proc
AYRES, William W.	Comdr. (MC) USN	NMS Bethesda	Path.&Lab.Proc.
BRAFF, Andrew F.	Lieut. (MC) USN	NH San Diego	Path.&Lab.Proc.
HAMEL, Herbert E.	Lieut. (MC) USN	NH Long Beach	Path.&Lab.Proc.

(Not Restricted)

NAME	RANK AND CLASSIFICATION		ACTIVITY	SPECIALTY TRAINING
HURLY, William C.	Lieut.	(MC) USN	NH San Diego	Path.&Lab.Proc.
MAYNARD, Russell M.	Lieut.	(MC) USN	NMS Bethesda	Path.&Lab.Proc.
MITCHELL, Robert H.	Lieut.	(MC) USN	NH Great Lakes	Path.&Lab.Proc.
PULLEN, Harvey T.	Lieut.	(MC) USN	NH Philadelphia	Path.&Lab.Proc.
SMITH, Bruce H., Jr.	Lieut.	(MC) USN	NH Brooklyn	Path.&Lab.Proc.
STAUBITZ, William J.	Lieut.	(MC) USN	NH Philadelphia	Path.&Lab.Proc.
LINGENFELDER, John	Lieut.	(MC) USN	NH San Diego	Obst. & Gynec.
MC PHEETERS, James W., Jr.	Lieut.	(MC) USN	NH Great Lakes	Obst. & Gynec.
SMITH, Carroll H., Jr.	Lieut.	(MC) USN	NH San Diego	Obst. & Gynec.
WILBUR, Carl E.	Lt.Cdr.	(MC) USN	NH Philadelphia	Obst. & Gynec.
JAQUITH, George O.	Lieut.	(MC) USN	NH San Diego	Oph-oto-laryn.
KOETT, John W.	Comdr.	(MC) USN	NH San Diego	X-Ray
ALQUIST, Veryl D.	Lieut.	(MC) USN	NH Great Lakes	Gen. Surg.
BELL, Landes H.	Comdr.	(MC) USN	NH Seattle	Gen. Surg.
BOGER, Ellwood V.	Comdr.	(MC) USN	NH Philadelphia	Gen. Surg.
BURROUGHS, Clement D.	Comdr.	(MC) USN	NH Long Beach	Gen. Surg.
CAREY, John E.	Comdr.	(MC) USN	NH Newport	Gen. Surg.
CRONEMILLER, Phillip D.	Lieut.	(MC) USN	NH Philadelphia	Gen. Surg.
EIGHMY, Herbert H.	Comdr.	(MC) USN	NH San Diego	Gen. Surg.
GUGGENBUHL, Frederick G.W.	Comdr.	(MC) USN	NH Oakland	Gen. Surg.
HIGGINS, James H.	Comdr.	(MC) USN	NH San Diego	Gen. Surg.
MC GIRR, John I.	Lieut.	(MC) USN	NH Long Beach	Gen. Surg.
MESSENGER, Harold C., Jr.	Lt.(jg)	(MC) USNR	NH Philadelphia	Gen. Surg.
MORRIS, William E.	Lt.(jg)	(MC) USN	NH St. Albans	Gen. Surg.
PROMER, John E.	Lt.Cdr.	(MC) USN	NH Corpus Christi	Gen. Surg.
RAY, Robert C.	Comdr.	(MC) USN	NH Seattle	Gen. Surg.
ROBBINS, Jacob J.	Lt.Cdr.	(MC) USN	NH NB Norfolk	Gen. Surg.
RUMSEY, Eugene W.	Lieut.	(MC) USN	NH Philadelphia	Gen. Surg.
SANTINI, Florian J.	Lt.Cdr.	(MC) USN	NH St. Albans	Gen. Surg.
TYREE, James I.	Lieut.	(MC) USN	NH San Diego	Gen. Surg.
WOOD, Dwight R.	Lieut.	(MC) USNR	NH Chelsea	Gen. Surg.
PLATT, John P.	Lieut.	(MC) USN	NH Bethesda	Orthoped. Surg.
GRACE, William J.	Comdr.	(MC) USN	NH Long Beach	Urology

(Professional Div., BuMed)

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(Not Restricted)

Re the Navy's New Large Centrifuge and Training for Research with It:

The principal problems in the field of Aviation Medicine requiring further basic and applied physiological research concern acceleration. Aircraft design and development would make greater and more rapid progress if the exact physical limitations of human beings to forces of acceleration and

(Not Restricted)

deceleration under various conditions were better defined. The lack of this knowledge restricts the field of applied physiology and thus hinders the development of methods and equipment to extend man's physical limitations. Full advantage can not be taken of the performance capabilities of aircraft because flight personnel are physically unable to match the planes. The development of many necessary and lifesaving devices has been impossible or delayed because information is not available.

To help overcome the deficiencies in basic knowledge and aid in applying any new knowledge toward a solution of the confronting problems, the Navy is constructing at Johnsville, Pa., near Philadelphia, a centrifuge which will be larger than any now known to exist. With this centrifuge it will be possible to reproduce closely the forces which are developed and affect flight personnel during various maneuvers of aircraft. The centrifuges now in use cannot accelerate quickly enough; they do not have other necessary performance features to simulate the maneuvers of recently developed aircraft; and most of them introduce certain undesired features, including the production of considerable vestibular stimulation (because of their small radius). This new Navy centrifuge will produce less vestibular stimulation because of its radius of 50 ft., which is over twice that of the largest of the other centrifuges, and is also designed so as to eliminate other bad characteristics. It will be possible, with it, to accelerate a test subject at rates up to 10 G's per second per second up to a maximum constant rate of 40 G's per second at top speed. Top speed for the cab suspended on the end of the fifty-foot arm will be approximately 170 miles per hour. It will be possible for this speed to be attained in approximately four seconds from a standstill. The centrifuge will be powered by a DC motor of over 4,000 h.p.

A low-pressure chamber which can be evacuated to a pressure altitude of 60,000 feet will be mounted on the end of the arm surrounding the seat. Variable temperature and humidity controls will be provided. Motion picture X-ray equipment is being developed for use on the centrifuge to study the effects of the forces from accelerations on the heart, lungs, diaphragm, viscera, and circulation. A television screen will provide the operator of the centrifuge with a continuous view of the subject as he whirls around the room; the action currents of the heart will be portrayed by an electrocardiograph; and ink-writers will give a continuous record of the heart rate, respiration, blood pressure, and ear pulse and ear opacity. The responses of the subject to light and buzzer signals, the recordings on the various instruments, and the image of the subject on the television screen will provide those conducting the studies with full information as to the status of the subject during exposure to these high forces. Thus, any undesired reactions of the subject can be readily detected and the centrifuge stopped.

The seat or platform on which the subject rides can be rotated into an upside-down position, so as to reverse in the subject's body the direction of the lines of action of the forces from acceleration, and then returned to upright during the same run; or it can be placed in a transverse position to the accelerating force for studies on the prone or supine position.

The latest design in electronic equipment for recording various physiological changes will be available and will include electro-encephalographic equipment, high-frequency oscillographs, strain-gauge accelerometers and manometers, photoelectric and photovoltaic cell ear opacity and ear pulse units, and recording cameras. The physiological laboratory will contain all necessary facilities, among which there will be DC variable voltage panels with impulse timing features, an experimental surgical unit completely equipped to permit studies, for example, on the effects on the physiology of the carotid sinus and aortic cardiac reflexes resulting from accelerating forces on the body, and apparatus for ballistocardiographic and tilt-table research. Van Slyke and Haldane gas analysis apparatus along with other organic and inorganic chemical analytical equipment will be available in the chemical laboratory. An adequately equipped carpentry, mechanical, and electronic shop will be available for developmental and maintenance work on equipment and devices. Offices are provided for the principal investigators and a library will be available with the latest periodicals, textbooks, and files of pertinent literature.

This centrifuge, together with the smaller Pensacola centrifuge, the ejection seat, and the split-tube catapult which will be available for studies on accelerations and decelerations of short duration, will provide the equipment to aid in solving the human problems of flight in present day high speed aircraft and the supersonic aircraft and projectiles of the future.

The Bureau of Medicine and Surgery is currently developing a Training Program for doctors interested in physiological research of the type indicated above. Applications are desired from Naval Medical Officers of the rank of Lieutenant Commander and below. Selected applicants will be given a course in Physiology leading to the M.S. degree at the University of Southern California. If additional courses are required, arrangements will be made at the Mayo Clinic and University of Minnesota and University of Pennsylvania for advanced training in Physiology. This course will be of approximately nine months' duration. Applications must contain an agreement not to resign during the course and to serve in the Navy three years after completion of the course. Those applicants of sufficient background who are selected and who are not now Flight Surgeons will be given the Flight Surgeons' course first,

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and then ordered to the course of instruction in Physiology. Graduates of this course or other persons of proven ability will be given the opportunity, while assigned to the units at Philadelphia, to complete the academic requirements and to prepare a suitable thesis for a Ph.D degree in Physiology so that proper standing and recognition may be achieved by these Medical Officers in their chosen field of Aviation Medical Physiological Research.

(Aviation Med. Div. and Professional Div., BuMed)

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(Not Restricted)

Opportunity for Training in Pathology: A review of requests for further training reveals that there is an acute shortage of officers desiring instruction in Pathology. Requests from regular medical officers are desired for beginning training in Pathology. Requests are desired from personnel who have had no previous instruction in this subject. (Professional Div., BuMed)

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(Not Restricted)

Dental Research Fellowships: The United States Public Health Service is establishing and maintaining research fellowships for the purpose of assisting promising civilian research fellows. Naval reserve dental officers who are now in an inactive duty status and interested in dental research are eligible for these fellowships. Applicants who are accepted may be authorized to pursue their work at institutions of their choice which include the U. S. Naval Dental School, and the U. S. Naval Medical Research Institute, both of which are units of the National Naval Medical Center, Bethesda, Maryland. Dentists who desire to make applications for fellowships and grants of funds for financing their projects should make a request for application forms to Officer-in-Charge, Research Fellowships, National Institute of Health, Bethesda, Maryland.

Three types of dental fellowships are available:

(1) Junior Research Fellowships for persons who hold a Master's degree from an institution of recognized standing in a science allied to public health or who have an equivalent number of hours of postgraduate study. Stipend $2400.00 per annum.

(2) Senior Research Fellowships for persons who hold a Doctor's degree in one of the sciences allied to public health from an institution of recognized standing. This includes the Doctor of Dental Surgery, Doctor of Dental Medicine, Doctor of Medicine, and Doctor of Philosophy in Biochemistry, Biology, Nutrition, Anatomy, Physiology, etc. Stipend $3000.00 per annum.

(Not Restricted)

(3) Special Research Fellowships for those who have done outstanding work in their field. These persons must hold a Doctor's degree in one of the sciences allied to public health, similar to those eligible for Senior Research Fellowships. The stipend is variable, depending upon the research reputation and experiences of the investigator. (Dental Div., BuMed)

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(Not Restricted)

Naval Dental Research: The Director of the Bureau of Standards, Department of Commerce, has advised the Chief of the Bureau of Medicine and Surgery that two dental officers will be accepted for assignment to the Dental Research Laboratories for training in research in dental materials. One dental officer has been nominated to the Bureau of Naval Personnel for orders to report in the near future. A second dental officer will be nominated a little later when he will be available for transfer from his present duty station. For administrative purposes both of these dental officers will be attached to the U. S. Naval Dental School, National Naval Medical Center. (Dental Div., BuMed)

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(Not Restricted)

Discontinuance of Naval Dental Officer Questionnaire, NavMed-256: Because the wartime requirement for the data supplied by NavMed-256, Naval Dental Officer Questionnaire, no longer exists, this form has been declared obsolete. The Bureau desires that it no longer be submitted. (Dental Div., BuMed)

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(Not Restricted)

Note for Naval Reserve Dental Officers Concerning Transfer to U. S. Navy: The attention of Naval Reserve dental officers is invited to Alnav 497 on page 36 of this issue, which removed the deadline of 15 September 1946 for submission of applications for transfer of Naval Reserve dental officers to the Regular Navy.

Naval Reserve dental officers, if eligible, may submit their applications for transfer to the regular Navy at any time from their date of reporting for active duty until six months after the expiration of their terminal leave. However, precedence in rank is lost when applications are submitted after the expiration of terminal leave.

It should be understood that final action on applications cannot be taken until the applicant has completed six months of active duty. (Dental Div., BuMed)

(Not Restricted)

Opportunity to Train for Research in Physiology: The Bureau of Medicine and Surgery offers medical officers of the Navy special training and opportunities for research in the problems encountered in aviation medicine. See page 20 of this issue.

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(Not Restricted)

Change in Deadline for Transfer Applications of Medical and Dental Officers of the Naval Reserve: See copy of Alnav 497 on page 36 of this issue.

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(Not Restricted)

"The Mosquitoes of Japan and Their Medical Importance": This new publication listed as NavMed 1095 was written by Tsai-Yu Hsiao, entomologist, Preventive Medicine Division, BuMed, and Richard M. Bohart, Lt. Comdr. H(S), USNR, Research Division, BuMed. It contains a key to the mosquitoes of Japan, notes on their taxonomy, distribution, bionomics and relation to diseases, and descriptions of the mosquito-borne diseases in Japan. Those interested may obtain a copy through a letter addressed to the Bureau of Medicine and Surgery, attention Preventive Medicine Division.

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(Not Restricted)

Public Health Foreign Reports:

Disease	Place	Date	No. of Cases
Cholera	China, Anhwei Province	July 21-31, '46	504 (66 fatal)
	Chekiang Prov.	July 11-20, '46	206 (24 fatal)
	Fukien Prov.	July 21-31, '46	265 (44 fatal)
	Honan Prov.	July 21-31, '46	425 (73 fatal)
	Hunan Prov.	July 21-31, '46	297 (69 fatal)
	Kiangsi Prov.	Aug. 1-10, '46	305 (47 fatal)
	Kiangsu Prov.	Aug. 1-10, '46	124 (7 fatal)
	Kwangtung Prov.	Aug. 1-10, '46	94 (11 fatal)
Plague	China, Fukien Province	July 1-31, '46	185 (83 fatal)
Typhus Fever	Mexico	July '46	201

Public Health Foreign Reports (Cont.):

Disease	Place	Date	No. of Cases
Yellow Fever	Nigeria, Oyo Province	(date report) Aug. 28, '46	7 (suspected)

(Pub. Health Reps., Sept. 20, '46)

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Circular Letter 46-136 20 September 1946 (Not Restricted)

To: MedOfsCom, NavHosps, Continental Limits US plus Aiea, T.H., Coco Solo, C.Z., and Guantanamo Bay, Cuba.

Subj: Hospital Accounting and Reporting Procedures.

This is a four-page letter of instructions. In addition to being sent to addressees, copies with enclosures were also mailed to Commandants of Naval Districts, District Medical Officers, and to Inspector of Medical Department Activities.

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Circular Letter 46-137 20 September 1946 (Not Restricted)

To: Naval Activities Having Nurse Corps Officer Personnel

Subj: Distribution of Navy Nurse Corps Uniforms - Procedures for.

This letter from the Chief of BuMed directs attention of Nurse Corps Officers to an enclosure originated by the Chief of BuSandA and giving the procedures for the distribution of uniforms for the Navy Nurse Corps.

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Circular Letter 46-138 24 September 1946 (Not Restricted)

To: MedOfsCom, NavHosps (Continental)

Subj: Personnel at Naval Hospitals - Home Town Newspaper Releases on.

Ref: (a) BuMed CirLtr 46-110, 26 Jul 1946.

Encls: 1. (HW) Ltr from SecNav (DirPubInfo), OOR-D Serial 10255, 13 Sep 1946.
2. (HW) Sample Personal Data Sheet.

1. Reference (a) is hereby cancelled and it will be noted from Enclosure 1 that the prior SecNav letter on this subject enclosed with reference also has been cancelled and is superseded by the present SecNav enclosure, which provides a plan for the voluntary forwarding to the Fleet Home Town News Center

(Not Restricted)

of information regarding the discharge of hospital patients, omitting any reference to diagnosis.

2. It is directed that the Personal Data Sheet be made available at some convenient point on the discharge route and that the dischargee be encouraged to complete this data sheet.

3. The Bureau desires that this revised plan be placed in effect immediately and that the information so obtained be forwarded promptly and currently to the Fleet Home Town News Center, 844 North Rush Street, Chicago 11, Ill.

--BuMed. Ross T. McIntire

Note: Copies of enclosures not reprinted in Bumed News Letter.

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Circular Letter 46-139 24 September 1946 (Not Restricted)

To: All Ships and Stations

Subj: Manual of the Medical Department, 1945; Advance change in.

1. To provide for the equal protection of all Navy and Marine Corps personnel against the ravages of progressive pulmonary tuberculosis, the Manual of the Medical Department is changed as follows:

21103.2. Chest examinations of personnel on active duty shall, if practicable, be made at least once a year. Personnel who have x-ray findings of possible future significance shall receive this examination every six months, where possible, using 14 x 17 inch film. Personnel presenting evidence of pulmonary tuberculosis which is considered to be of present clinical significance are not to be retained on active duty, although evidence of pulmonary tuberculosis of no present significance, particularly when discovered during the course of treatment for some intercurrent condition or during routine examinations, is not a cause for separation from the service.

--BuMed. Ross T. McIntire

Circular Letter 46-140 25 September 1946 (Not Restricted)

To: District Medical Officers

Subj: Printing Requirements of District Medical Activities, control of.

Ref: (a) Rules, regulations, policies, and standards for the control of Navy publications and printing (NavExos P-35 Rev. Nov. 1945).

Encl: 1. (HW) Copy of reference (a).

1. The District Medical Officer shall be responsible for maintaining an effective coordinated control over printing requirements for medical activities under his cognizance in collaboration with the District Publication and Printing Office. In performing this function the District Medical Officer shall execute the rules and regulations governing printing by the District Publication and Printing Office as outlined in reference (a).

2. The District Medical Officer shall review and approve all requests for printing from the District Publication and Printing Office submitted by medical activities within his district. Only such printing should be approved as is necessary to conduct the official business of the requisitioning activity. NavMed forms and other standard Navy Department and Government forms should not be approved for printing by the District Publication and Printing Office. A supply of these forms is maintained at the Publication Distribution Centers. --BuMed. Ross T. McIntire

Note: Copy of enclosure not reprinted in Bumed News Letter.

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Circular Letter 46-141 26 September 1946 (Not Restricted)

To: MedOfsCom, NavHosps, (Continental)

Subj: Portable Typewriters, Authorization by War Assets Administration for Purchase of by Certain Patients in Naval Hospitals.

This letter from the Chief of BuMed sets forth eligibility, procedure, prices, dates of sales, etc.

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Circular Letter 46-142 27 September 1946 (Not Restricted)

To: Commandants, All Naval Districts; Chief, Naval Air Training Command, and Medical Inspector, Pacific Coast.

Subj: Inspection of Naval Medical Department Activities by District Medical Officer, or Senior Staff Medical Officer, Chief Naval Air Training.

Ref: (a) Chapter 2D, paragraph 12D1-12D2, Manual of the Medical Department, U. S. Navy (Rev. 1945).

1. At least once every six months the District Medical Officer, or in the case of the Naval Air Training Command, the Senior Staff Medical Officer of that command, or his representative, shall conduct a thorough inspection of each Naval Medical Department Activity located within the administrative control of the command concerned. Naval Hospitals physically located within the military confines of Naval Air Training Commands are considered as within the administrative cognizance of naval districts and will be inspected by the District Medical Officer. The District Medical Officer shall request from the Commandant, and the Senior Staff Medical Officer, Naval Air Training Command from the Chief, Naval Air Training Command, the assignment of such specialized officer personnel as may be considered necessary to assist in conducting these inspections.

2. Reports of these inspections, with appropriate recommendations, shall be prepared by the District Medical Officer, or the Senior Staff Medical Officer, Chief Naval Air Training, whichever applies, and forwarded through the Commanding Officer of the Medical Department Activity inspected, and via official channels, to the Chief of the Bureau of Medicine and Surgery. Each activity through which the report is routed shall state by endorsement the action taken, or to be taken, regarding recommendations contained therein.

3. In order that the District Medical Officers and the Senior Staff Medical Officer of Chief, Naval Air Training Command, may be cognizant of conditions existing in Medical Department Activities, all official correspondence and other matters affecting Medical Department Activities shall be referred to the District Medical Officer or in the case of a Naval Air Training Command, to the Senior Staff Medical Officer of the Chief, Naval Air Training Command for his information, recommendation or action.

4. A revision of ref. (a), incorporating this directive, is in process and the necessary changes will be distributed in the near future.

--BuMed. Ross T. McIntire

Circular Letter 46-143 27 September 1946 (Not Restricted)

To: All Stations

Subj: Accounting Instructions, Medical Supply Depot Equipment reclassified as Supplies.

Ref: (a) ALNAV 147-46, N.D. Bull. of 15 April 1946, 46-721.

1. As of 1 July 1946, reclassification of equipment to supplies in connection with the adoption of BuMed Section, Catalog of Navy Material shall be accomplished in the following manner:

(a) Prepare a Transfer Voucher (NavSandA 127) for the book value of all equipment reclassified as supplies.

(b) Record value of the above transfer voucher as an expenditure in the Equipment Section of Journal of Receipts and Expenditures under column "Inventory Adjustment" and report this amount on line 13 and Analysis (7) of NavMed E.

(c) Record the value of the above transfer voucher as a receipt in the Supplies Section of the Journal of Receipts and Expenditures under column "Inventory Adjustment" and report as a receipt on Line 23 and Analysis (4) of NavMed E.

(d) Equipment in use which has been reclassified as supplies shall be issued on NavMed Form R immediately.

(e) Individual ledger sheets comprising the total book value of equipment reclassified as supplies shall be removed from the equipment ledger and installed in the supplies ledger.

2. At shore stations (including Naval Hospitals), items of equipment formerly listed as such in the old Medical Supply Catalog and do not appear in the BuMed section, Catalog of Navy Material should be assigned a complete stock number and taken up in the appropriate class in the equipment ledger for items in the Catalog of Navy Material. Also, items of supplies in the same category to items of equipment mentioned above should be assigned a complete stock number and taken up in the Supplies Ledger for items in the Catalog of Navy Material. This procedure will also apply to items of equipment transferred to supplies and do not appear in BuMed section, Catalog of Navy Material. There are no provisions in the Manual of the Medical Department for a "Non-Listed Section" in either the Equipment Ledger or Supplies Ledger.

--BuMed. Ross T. McIntire

Circular Letter 46-144 27 September 1946 (Not Restricted)

To: MedOfCom, All Continental Hospitals, plus Aiea, T.H.; Guantanamo Bay, Cuba; and Coco Solo, C.Z.

Subj: Accounting Instructions, Medical Supply Depot Equipment Reclassified as Supplies.

1. As of 1 July 1946, reclassification of equipment to supplies in connection with the new BuMed Section, Catalog of Navy Material shall be accomplished in the following manner:

(a) Issued Equipment

Prepare an accounting document, numbered in GLAV series indicating the complete journal entry indicated below. Transfer shall be made at book value of the equipment at time of transfer and not on an average unit cost. This voucher will be signed by the Finance Officer and approved by the Medical Officer in Command and shall accompany the financial reports for the quarter in which reclassification is accomplished.

The following entries shall be recorded in all applicable accounting records and shall appear on the face of the voucher:

Debit Account 1 - Capital
Credit Account 3 - Equipment

To remove from equipment account items of equipment reclassified as supplies and charged to past operations.

Individual sheets in the equipment ledgers will be adjusted accordingly.

(b) Unissued Equipment

A separate voucher shall be prepared as above, items of equipment in store as supplies and transfer the value of such items from Account 3 - Equipment to Account 4 - Stores. Transfer shall be made at book value of the equipment at time of transfer and not at an average unit cost. Deduct the book value of this equipment on individual equipment ledger sheets and record as supplies on individual stores ledger sheets.

The following entry shall be recorded in all applicable accounting records:

Debit Account 4 - Stores
Credit Account 3 - Equipment

(Not Restricted)

To record book value of items of equipment reclassified as supplies and transferred from equipment to supplies ledgers.

(c) Statement of Storeroom Inventories

Record the total amount of issued and unissued equipment (reclassified) in column (1) opposite Equipment Adjustments - Deductions and record total amount of unissued equipment reclassified in column (1) opposite Supplies Adjustments - Additions. This procedure will effect an adjustment of opening inventory as of 1 July 1946.

(d) Statement of Capital Investment

Record in column (1) opposite Equipment the balance per Account 3 - Equipment after adjustment, record in column (2) the value of items in store after adjustment of unissued equipment and record in column (3) the value of items in use after adjustment of issued equipment. Record the following schedule on this statement for the quarter in which the adjustments were made:

	Col. 1	Col. 2	Col. 3
Balance Account 3 before adjustment	$	$	$
Total amount of adjustment			
Balance Account 3 after adjustment	$	$	$

2. It is the Bureau's desire neither to reflect any amounts due to reclassification of equipment to supplies in current operating expense accounts nor to make any adjustments to past operations costs. The above procedure will only reflect adjustments in General Ledger Accounts and in no way will it effect the operating expense accounts.

3. Each hospital shall be prepared to defend each item transferred from one category to another and for this purpose a record should be maintained of each item effected. Filing the old equipment ledger sheet, after transfer is made is sufficient justification.

4. Items transferred to Account 4 - Stores should be taken up in the catalog Navy Material Supplies Ledger under the appropriate class with a complete stock number. There are no provisions in the Manual of the Medical Department for a "Non-Listed Section" of the Supplies Ledger.

--BuMed. Ross T. McIntire

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Circular Letter 46-145

This letter was given limited distribution and classified as not for general information.

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Circular Letter 46-146 2 October 1946 (Not Restricted)

To: Comdt, NDs, All BuMed Activities (Cont.)

Subj: Personnel Allowances During Demobilization - Roll-up Schedule of.

Ref: (a) BuPers Circular Letter 195-46 of 30 Aug 1946

Encl: (A) BuMed Roll-up Schedule

1. Enclosure (A) BuMed "Roll-Up" Schedule for the period 1 October 1946 to 1 March 1947 prescribed by reference (a), is forwarded for information and compliance.

2. The individual figures are tentative, and changes will be made as conditions warrant. BuMed has requested the Chief of Naval Operations to change the Operating Force Plan accordingly. The total personnel figure for BuMed activities remains unchanged.

--BuMed. Ross T. McIntire

Note: Enclosure which was sent to all addressees not reprinted here.

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Circular Letter 46-147 2 October 1946 (Not Restricted)

To: District Dental Officers

Subj: Printing Requirements of District Dental Activities, control of.

Ref: (a) Rules, regulations, policies and standards for the control of Navy publications and printing (NavExos P-35 Rev. Nov. 1945).

The reference and body of this letter from the Chief of BuMed contains the same basic instructions as Circular Letter 46-140 on page of this issue.

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Circular Letter 46-148 2 October 1946 (Not Restricted)

To: All Ships and Stations

Subj: Transportation of Remains where Death Occurs Outside Continental United States.

Refs: (a) BuMed CirLtr No. 46-81, 14 May 1946 to Comdts, NavDists, RivComds, and AirTraComds.
(b) AlNav 372, 11 July 1946.

1. In order to consolidate and clarify previous directives concerning the transportation of remains of deceased Navy and Marine Corps personnel when death occurs beyond the continental United States, the following instructions are issued. These instructions supersede reference (a), which is hereby cancelled, and supplement reference (b).

2. Whenever practicable, remains will be properly embalmed and encased in accordance with paragraph 3421, Manual of the Medical Department, and returned to the United States by surface vessels. Remains that cannot be returned shall be temporarily interred in the nearest American cemetery, if practicable; otherwise temporary interment may be made in any available civilian cemetery. Report on NavMed 601 is required.

3. Normally, air transportation will not be authorized. However, in the tenth, fifteenth and seventeenth naval districts when transportation by surface vessels is not practicable within a reasonable length of time (e.g., two weeks), when the circumstances sufficiently justify, and when otherwise practicable transportation to the United States by aircraft may be requested. Requests for such transportation will be addressed to the Bureau of Medicine and Surgery, stating the circumstances and requesting that necessary arrangements be made. When authorized, the transportation by air will be to a naval activity in the United States in order that the remains may be inspected and put in good condition prior to forwarding to final destination as directed by the Bureau of Medicine and Surgery.

4. Return to the United States by air transportation from all other overseas areas is not contemplated and will not be authorized; however, when death occurs at a place where facilities for embalming or encasement are not available, transportation by airplane to another overseas Naval activity, within practicable flying distance, where such services are available, may be effected through the local command. Similarly, transfer of remains by air to another overseas activity for return to the United States by surface vessel may be arranged locally.

(Not Restricted)

5. Air transportation for remains of the dead will not be requested or provided within the continental limits of the United States.

-- BuMed. Ross T. McIntire

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ALNAV 497 30 August 1946 (Not Restricted)

Subj: Deadline for Transfer Applications

Reference Alnav 416-46. This Alnav refers to the deadline for the submission of applications for transfer of Naval Reserve and temporary USN officers to the Regular Navy under the provisions of BuPers Circular Letter 288-45 and 303-45. Under paragraph 2 of Alnav 416 and subparagraph (d): "Officers who request transfer to the Regular Navy in the Medical Corps or Dental Corps."

--SecNav.

Note: Basic part of paragraph 2 of Alnav 416-46 reads: "This deadline of 15 September does not apply to officers in the following categories: ___"

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